

Treek'lam

Swanand Sinalkar¹ | Gayatri M Phade²

¹PG Scholar in E&TC (VLSI & Embedded System), SITRC, Nashik, Maharashtra, India.

²Associate Professor, Department of Electronics and Telecommunications, SITRC, Nashik, Maharashtra, India.

To Cite this Article

Swanand Sinalkar and Gayatri M Phade, "Treek'lam", *International Journal for Modern Trends in Science and Technology*, Vol. 04, Issue 10, October 2018, pp. 63-67.

Article Info

Received on 21-Aug-2018, Revised on 28-Sept-2018, Accepted on 11-Oct-2018.

ABSTRACT

The study investigates the timeless and modern thoughts in Jane Austen's works. It sheds light on the fluctuation fame of the writer during her time and how she gradually started receiving her fine reputation. When the critics become aware of her depth debate, she stands as one of the most progenitor writers of the late centuries. Besides, it dissects the perspectives of Jane Austen as a pioneered modern woman. Her works are attractive because they understand the human psychology in a modern way. They are gentle comedies of manners which always take place in a polite society. However, there are dark and disruptive subtexts that modern readers still can be influenced. Her characters notice challengeable political topics that are still of importance today. The unique techniques and liberal thoughts such as individualism and feminism keep her multi-layered works interesting and fresh. As a liberal feminist, who searches for women right, respect, and increases their chances, Austen presents liberal ideas and social criticism. She addresses domestic constraints, the accuracy of women ideas and the issue of marriage. She wishes to depict a world that is not suppressed by subjective law, but rather a familiar and recognizable world. She shows her opposition to primogeniture law, lack of property rights for women and female economic dependence on a male. In the society that is shown by Austen, there are only women, with no men, i.e. the society of the sitting room. Her works are feminist because she estimates women by a new approach. Austen's works clearly suggest taking into account the importance of women.

KEYWORDS: feminism, individualism, liberal thoughts

Copyright © 2018 International Journal for Modern Trends in Science and Technology
All rights reserved.

I. INTRODUCTION

In today's world global warming is a serious issue and everybody on the earth facing this problem. The number of natural calamities is increased in different areas of world. Pollution is the measure issue and caused severe health related issues. So many problems can be solved by decreasing desertification which is rapidly growing with increased in urbanization by human beings. In today's busy and hectic schedule people find it difficult to have time for the things like tree

plantation. Tree plantation using robot aims to use feasible automation by applying emerging machine technologies. This approach lowers down the usage of energy and replaces former methods by providing powerful means [1]. In current world rapid industrialization in proportion of deforestation is much bigger. That has caused increase in air pollution ultimately affecting the OZONE layer. Irrespective of rapid industrialization, advanced technology being used in industry, no specific attention is paid towards automation of tree plantation which includes use

of robot helping for tree plantation program. The drone "Treek'lam" is a tribute to Doctor APJ Abdul Kalam who had given a great contribution in social development of society.

In recent world robots are replacing the human's role in most of the fields. Robots are widely used in military operations and for other critical observations. Apart from typical use it can also be used to accomplish aim of tree planting and to minimize desertification. Now days, proficient as well as expert person in the field of robotics uses remote control for operating drone and manages various tasks such as material dropping service, monitoring the things or human actions, etc. [4]. In this paper a concept is described in which the robot contains total mechanism which makes possible to sow seeds in various locations easily. The robot contains drilling and seed sowing mechanism, sensors, communication medium and controlling system. It is a flying robot same as drone containing seeds to be sown. The drone can sows more than hundreds of seeds per day at pre decided locations assigned by the operator at base station. It works in Auto mode and Manual mode.

II. RELATED WORK

To scale down the utilization of human beings, computerization is needed. All industries prefer to have mechanical and electrical based machines to perform the work. By using such automation, great amount of physical tasks can be reduced and also it accelerates efficiency of system [2]. To evolve a new way for developing intelligent machine that can work robustly in an uncertain environment is a necessity now a day. The structure may not be as brilliant as human but it must be able to perform wisely in perceived circumstances. The machine should be embedded with sufficient electronics inside it so as to perform intelligently for long duration in uncertain climate by performing effective operations. By determining human action in particular circumstance is the easiest way to recognize the intricacy and can be mapped the solution on system regulation [3]. There are various tree-planting methods, like planting by hand as well as delivering dry seeds in air. But hand planting technique is time consuming and costly, and spreading the seeds which are dry serves lesser cost [4]. The plantation of trees is reduced as most of the area on the earth is automated; on which tree plantation is carried out by humans this has expanded desertification. By taking such scenario in mind implementing robot technology for tree plantation serves sensible solution [5]. Tree

plantation is an essential work which needs to be carried out in today's world. Trees reduce the problem of carbon dioxide which is a harmful gas and a critical issue. Trees help to construct superior atmosphere with the benefit of providing useful things [7]. The main objective for constructing tree plantation robot is to sow the seeds precisely. Currently seed sowing machines uses a mechanism which faces lots of issues and not able to drop needed seeds. The drone equipped with the advanced mechanism serves the purpose efficiently [8].

III. DEVELOPED SYSTEM

As deforestation is increasing day by day, it evolves a necessity to increase the number of trees for better environment for human beings. In this paper a flying robot which is nothing but a drone is described to solve an issue and to serve the purpose effectively. People prefers to use robots as the can work efficiently and without getting tired by performing specific task for long period of time. The drone "Treek'lam" is assembled to carry out the operation of tree plantation.

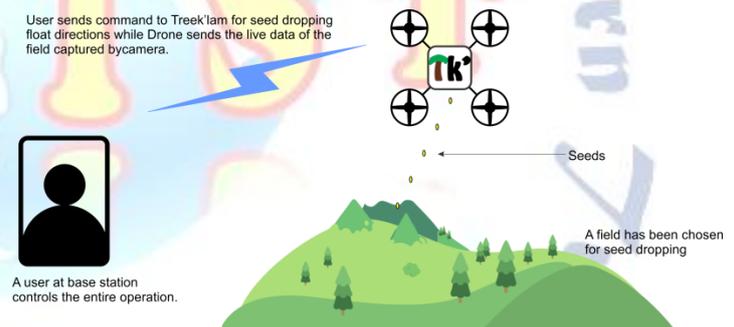


Fig. 1 Developed System for Treek'lam system

Fig.1 shows proposed system for tree plantation using drone. To develop a robot which is needs to be small and walks away lightly is tedious task. It should be able to walk in such manner to get through in newly planted forest. To avoid this, flying robot concept has been chosen. Drone flies in an air and finds the suitable location for the plantation. The operator gives the command or instruction to drone for the sowing of seeds. As the drone gets a command it will get reached to predefined location. The Drilling Mechanism drills on the ground and seed sowing mechanism drops one seed into each hole. This procedure continues up to the last predefined location. Once the drone will reach to last point then it will ask operator whether to continue for next location or to come back to base station. This is how the system works in manual and in automatic mode. The drone is self

powered by using battery. After accomplishing task battery can be charged at the base station if needed by the operator and the drone will get ready to be used for further operations. The battery status can be read from a base station and necessary action can be taken if needed.

A robot can carry more than hundred seeds in one trip. The seeds are fed into the robot at front side and loaded onto a revolving cartridge until full, till the robot begins its cycle. In one round the robot plants as many seeds as possible and it can reach to the destination. A drone can manage the tasks in slots and programming can be done for larger area coverage to accomplish tree planting [6].

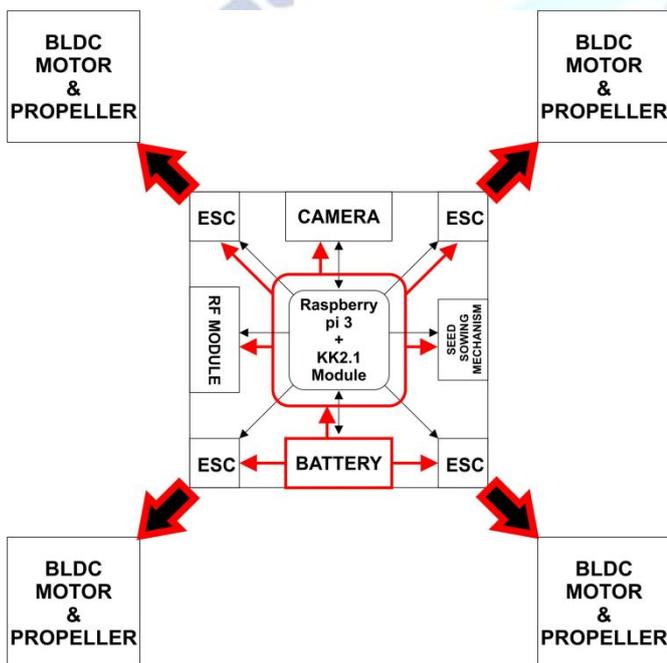


Fig. 2 Block Diagram of Treek'lam system

Fig.2. displays block diagram of the system. A controller unit is the heart of a whole system. A controller has to perform various tasks like to control the rotation of all DC motors through electronic speed controller. In machine designing, the use of brushless DC motor is getting more and more prominent. This motor consists of number of variants as far as size and power is concerned. This makes it as a preferable selection to use in automation system development. The brushless DC motor serves greater amount of torque, so it is a preferable choice for the operation having concern of higher load and area [9]. The next important component is battery. Battery provides supply to all of the components like controller, camera, protection sensors, General Packet Radio Service Module and seed sowing mechanism. If battery power is getting down below the set level, it will

send alert signal to base station and operator can take an appropriate action, whether to continue with the operation or to not at that instance of time. Camera is used to select the location for seed sowing from base station. Once the location is captured the seed sowing points are fixed. The General Packet Radio Service provides fundamental facilitator which serves unbreakable connectivity for data. It provides higher speed for uplink as well as for downlink data transmission besides traditional wired communication devices [10]. In this system it is used to send the control signals to flying robot from the base station, also it is used to send alert or emergency signals from drone to base station, Protection sensors are nothing but Infra Red sensor and Ultrasonic sensor. It helps robot to protect itself from calamities. Seed sowing mechanism stores the seed to be sow and a drilling mechanism to make drill at predefined locations from base station. It drops one seed in one hole at a time. The working of seed dropping is controlled through controller based DC motor. Electronic speed controller decides the rotation speed of propeller motor. High speeds motors are attached with propellers which are used to generate the thrust to fly the robot in sky.

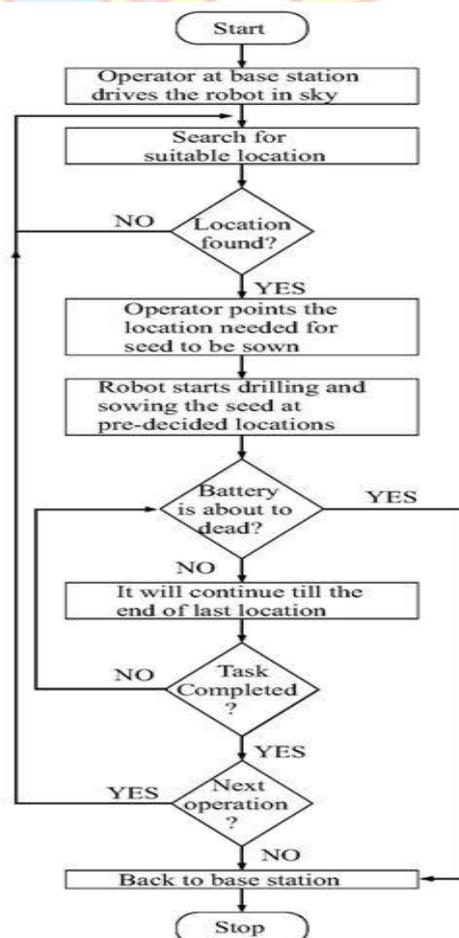


Fig. 3 Work Flow of Treek'lam system

Fig.3 describes work flow of the system. The workflow starts with a manual flying of robot in the sky, for searching suitable location. The loop will continue till the suitable location is found. Once location is decided then operator marks the location for seed sowing. At marked locations drone will drill the ground and sow the seeds. It checks its battery supply continuously. If battery is about to dead then drone will go back to base station otherwise proceed further on operators command. The drilling and seed sowing will continues till the last predefined location. Once the task is finished it will ask operator to select next location or to come back to the base station. If operator selects next location then whole procedure repeats from searching of location till the drone will ask to operator about its next decision, otherwise process ends.

IV. RESULTS



Fig. 4 Seed Sowing Mechanism

Fig.4. shows a seed dropping mechanism. It contains a Plastic DC motor, a container and seed collecting-dropping mechanism. As soon as the operator fires DROP SEEDs command from the base station the Raspberry pi trigger the pin no.40. This pin is connected to the base of BC 547 transistor. The BC 547 is used to drive the DC motor. Now the motor rotates for 0.5 seconds and stop. Between this rotation seed collecting-dropping mechanism collects the seeds from the container and drops on the ground. The cycle is completed.

It has been observed that the drone can be operated up to 10 meters of the height from the base station. The Total current consumption of the battery is 2.5Amp. So it will take 1 hour to drain

the battery completely. Within this one hour we can drop more than 500 seeds.

The quad copter has four DC motors which rotate in different directions. For simulation purpose single DC motor is interfaced with AT89C51 through L293D IC. All motors can be rotate in different directions simultaneously with single motor driving IC.

V. CONCLUSION

Treeklam robot sows a seeds as much as possible, depending upon the distance battery capacity and can plant millions of trees within a year which help to protect OZONE layer as well as helps to reduce the Air pollution. It ensures fast reforestation which will help to make our planet green. We can solve the CO2 problem within few years using a solution that makes money instead of costs money.

VI. FUTURE SCOPE

Treek'lam can have more seed sowing capacity per day by integrating more advance mechanism electronics. The travelling speed can be minimized and travelling distance can be maximized. It can be utilized the solar energy to charge itself and work continuously without any interrupt. Treek'lam can be fully autonomous drone with the help of image processing which can automatically find the suitable sowing location and sows the seeds continuously.

ACKNOWLEDGMENT

I would like to thank Dr Mrs Gayatri M Phade for her guidance and support.

REFERENCES

- [1] S. Mohan, E. Praveen Kumar, B. Paulchamy, "Certain investigation of precision agriculture robot using lab view," IEEE Publication, Intenational Conference on Current Trends in Engineering and Technology, July 2013, pp. 319 – 322.
- [2] Gholap Dipak Dattatraya, More Vaibhav Mhatarde, Lokhande Manojkumar Shrihari, Prof. Joshi S.G, "Robotic Agriculture Machine," International Journal of Innovative Research in Science, Engineering and Technology, Volume 3, Special Issue 4, April 2014.
- [3] Simon Blackmore, Bill Stout, Maohua Wang, Boris Runov, "Robotic Agriculture – The Future of Agricultural Mechanisation?," 5th European Conference on Precision Agriculture Uppsala, Sweden, June 2005.
- [4] Derek Markham, Tree Hunger, New Mexico, Apr. 2015. [Online]. Available: <http://www.treehugger.com/clean-technology/how>

- do-youplant-1-billion-trees-year-drones-course.html [Accessed: July 25, 2016].
- [5] Tatiana antonelli abella, Tree Planting Robot Ensures Fast Reforestation, Goum Book. July 2010. [Online]. Available: <http://goumbook.com/treeplanting-robot-ensures-fast-reforestation/> [Accessed: July 22, 2016].
- [6] Chris Burns, Yanko Design, Aug. 2010. [Online]. Available: <http://www.yankodesign.com/2010/08/19/robots-save-earth/> [Accessed: July 25, 2016].
- [7] Pieter Hoff, in The Treesolution book, fifth edition, Jan. 2013, pp. 120- 121.
- [8] Karan Singh, K N Agrawal, A K Dubey, M P Chandra, "Development of the controller based seed cum fertilizer drill", IEEE Publication, International Conference on Intelligent Systems Design and Applications, Kochi, Nov. 2012, pp. 369 – 374.
- [9] Apurva Sanjay Mahajan, Yugandhara Sanjay Mahajan, Sneha Vijay Wadje, "Brushless DC Motor," National Conference on Recent Innovations in Science Engineering and Technology, Pune, Nov. 2014.
- [10] ETSI, General Packet Radio Service, [Online]. Available: <http://www.etsi.org/index.php/technologiesclusters/technologies/mobile/gprs> [Accessed: July 25, 2016].